

Evaluation of Nutrition and Physical Activity Policies and Practices in Child Care Centers within Rural Communities

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Abstract

Background: Although some researchers have examined nutrition and physical activity policies within urban child care centers, little is known about the potentially unique needs of rural communities.

Methods: Child care centers serving preschool children located within low-income rural communities ($n=29$) from seven states (Indiana, Kansas, Michigan, North Dakota, Ohio, South Dakota, and Wisconsin) were assessed to determine current nutrition and physical activity (PA) practices and policies. As part of a large-scale childhood obesity prevention project, the Community Healthy Living Index's previously validated Early Childhood Program Assessment Tool was used to collect data. Descriptive statistical analysis was conducted to identify high-priority areas. Healthy People 2020 and the Academy of Nutrition and Dietetics' recommendations for nutrition and PA policies in child care centers were used as benchmarks.

Results: Reports of not fully implementing (<80% of the time) recommended nutrition-related policies or practices within rural early child care centers were identified. Centers not consistently serving a variety of fruits (48%), vegetables (45%), whole grains (41%), limiting saturated fat intake (31%), implementing healthy celebration guidelines (41%), involving children in mealtime (62%), and referring families to nutrition assistance programs (24%) were identified. More than one third of centers also had limited structured PA opportunities. Although eligible, only 48% of the centers participated in the Child and Adult Care Food Program.

Conclusions: Overall, centers lacked parental outreach, staff training, and funding/resources to support nutrition and PA. These results provide insight into where child care centers within low-income, rural communities may need assistance to help prevent childhood obesity.

Introduction

Currently, it is estimated that 22.8% of children ages 2–5 years are overweight or obese, with higher rates among low-income families.¹ Young children's dietary patterns are suboptimal and not meeting national recommendations.² Because a child's body weight at 2–6 years is a robust predictor of his or her weight status as an

adult, early childhood is an optimal time for obesity prevention.³ For young children, their eating and physical activity (PA) environment as provided by their parents is an important context for the development of obesogenic behaviors. However, as children begin to spend more time outside the home, such as in a child care setting, influences on their diet and PA habits may shift from parents to the child care environment.⁴ Specifically, the number of

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preschool-age children in child care has risen from 23.1% to 25.2% since 1985, with higher participation rates for children within low-income households.⁵ Preschool-age children spend an average of 21–36 hours per week in child care, with greater time spent in care if mothers are employed.⁵ Considering these trends, child care centers are a logical venue to consider for childhood obesity prevention efforts.

Variability in nutrition and PA policies and practices in child care centers is expected because each state sets its own standards. For instance, as of 2006, only 24 U.S. states had implemented nutrition standards aligning with Healthy People 2020 which defines nutrition standards as either (1) meals and snacks are consistent with Child and Adult Care Food Program or similar requirements, or (2) meals and snacks align with the Dietary Guidelines for Americans.^{6,7} Healthy People 2020 includes an objective to increase this to at least 34 states. The National Child and Adult Care Food Program (CACFP) has nutrition policies for participating child care centers.⁸ When policies are implemented, positive benefits can be seen. For example, some success was observed in the large-scale implementation of certain nutrition policies, such as ensuring free access to water at all times and ensuring children are never forced to eat⁹; however, beyond this, there is a dearth of nutrition- and PA-related policies currently implemented or enforced in child care centers.

Beyond policies, several studies have previously implemented obesity prevention programs for preschool-age children in child care centers such as preschools.¹⁰ Studies intervening in child care centers have included diverse samples^{10–14} and demonstrated success in various targeted outcomes, including reducing children's fat intake,¹⁵ increasing PA,¹⁶ and reducing sedentary behavior.¹¹ Unfortunately, efforts in child obesity prevention and intervention have frequently focused on urban environments.¹⁷

Whereas children living in urban environments are often at increased risk of obesity, children living in rural communities may also have a higher risk of obesity than originally understood.^{17–19} In some reports, children in rural communities had a 5.4% greater chance of being overweight than their urban counterparts.^{20–22} Specifically, rural children had higher eligibility for free and reduced meals, indicating higher rates of poverty, which is associated with higher risk of obesity.¹⁷ Currently, it is not clear why these differences in the risk of obesity exist. However, cross-sectional analysis of the National Health and Nutrition Examination Survey data suggests that differences between rural and urban environments may not be discernable at the personal level, but might require policy and environmental investigation.²² And although some researchers have examined nutrition and PA environments and policies within child care centers, little is known about the potentially unique needs of rural communities. Therefore, the aims of this research were to (1) provide a descriptive analysis of current policies and practices in

rural, child care centers serving low-income families within seven north central states of the United States and (2) identify areas needing improvement.

Methods

As part of a multistate, community-based research project to prevent childhood obesity, community coalition members from seven north central states (Indiana, Kansas, Michigan, North Dakota, Ohio, South Dakota, and Wisconsin) interviewed child care centers within low-income, rural communities to determine the current status of nutrition and PA policies and practices. The overall goal of the Communities Preventing Childhood Obesity (CPCO) project is to improve understanding of the factors necessary to mobilize rural, low-income communities to make environmental changes aimed at the prevention of childhood obesity. As a component of several project baseline measures, each participating state selected two rural, low-income communities to assess for the project. Rural was defined based on the Office of Management and Budget's definition, which delineates an area as rural or not based on presence of a metropolitan statistical area, which contains a core urban area with a population of 50,000 or more.²³ Low income was defined based on the community's average income rate being below the state's average poverty rate; however, reservation communities were excluded, when applicable, because findings from that community would be less generalizable.

Because the target unit of measure was the community rather than an individual, institutional review board for human subjects approval was obtained or deemed exempt or inapplicable for each university institution (Purdue University, Kansas State University, Michigan State University, North Dakota State University, The Ohio State University, South Dakota State University, and University of Wisconsin) overseeing the project in their respective state. Community health coalition members in each state were provided instructions as part of the project protocol on assessing at least one child care program within each rural community. The community coalition member interviewed at least one employee at each child care center site to determine current nutrition and PA practices and policies. If greater than one employee elected to participate, the highest-ranking employee's responses were used.

Measures and Analysis

The YMCA's Community Healthy Living Index (CHLI) assessments were used in each of the 14 low-income, rural communities (two communities in each of the seven states).²⁴ The CHLI is a comprehensive, previously validated tool, developed in collaboration by YMCA of the USA, Stanford University, Harvard University, and St. Louis University.²⁵ The CHLI was designed to assess opportunities for active living and healthy eating in all sectors of society, including where people live, work, learn, and play.²⁵ The tool includes separate assessments for school, after school,

work site, neighborhood, and community settings to assess the current environment, policies, and intention to change or improve the PA or nutrition environment.²⁵

The Early Childhood Program Assessment Tool within the CHLI is intended for early child care centers to assess the physical environment, promotion efforts, and policies that relate to nutrition and PA.²⁵ It contains questions within several subscales, including “healthy eating opportunities” and “general healthy living,” and at the end of each subscale, questions assess respondent’s confidence in their responses for that subscale.²⁵ The tool was designed to capture the progression of programs, physical environment, promotional efforts, and policy. Most questions have five categorical responses with numerical descriptions assigned as quintile percentage ranges, for example, “Always/ almost always (81–100%),” “Usually (61–80%),” “About half (41–60%),” “Sometimes (21–40%),” or “Rarely/ never (0–20%),” or three response categories designed to demonstrate current status of an item, such as “Yes,” “In development,” or “No.” The tool also assessed child care characteristics, including type of center and participation in the CACFP, which provides financial meal assistance to child and adult care institutions and family or group day care homes, particularly those families eligible for reimbursable meals.²⁶

Descriptive statistics and frequencies were calculated using the Statistical Package for the Social Sciences (IBM SPSS Statistics for Windows version 21; SPSS, Inc, Chicago, IL), and results were interpreted and compared to current benchmark recommendations for child care center nutrition and PA policies (Table 1).^{9,27,28} Results were considered “in compliance” if the site conducted, enforced, or followed through with an action or policy “always/almost always” or greater than 80% of the time. Responses that failed to meet recommendations at this frequency rate were flagged for reporting.

Results

At least two childcare centers within low-income, rural communities were assessed from each of the seven states (Indiana [*n* = 2], Kansas [*n* = 4], Michigan [*n* = 2], North Dakota [*n* = 2], Ohio [*n* = 8], South Dakota [*n* = 9], and Wisconsin [*n* = 2]) participating in the CPCO research project. Child care sites (*n* = 29) were comprised of school system (*n* = 9), private (*n* = 7), government (*n* = 5), faith based (*n* = 4), community action agency (*n* = 2), community college (*n* = 1), and unknown (*n* = 1) settings. When comparing implementation of nutrition-related policies (of policies enforced always/almost always, >80% of the

Table 1. Benchmarks for Nutrition and Physical Activity Practices and Policies in Child Care Settings

Food- and nutrition-related recommendations

Nutritional content of food and beverages:

- Foods and beverages served should be nutritionally adequate and consistent with the Dietary Guidelines for Americans.²⁷
- A variety of healthful foods, including fruits, vegetables, whole grains, and low-fat dairy products, should be offered to children daily.^{9,27}
- Foods and beverages high in energy, sugar, and sodium and low in vitamins and minerals should be limited.^{9,27}

Mealtime specific:

- Food is not used as a reward or as punishment.⁹
- Child care providers should model and encourage healthful eating for children.²⁷
- Child care providers should work with children to understand feelings of hunger and satiety and should respect children’s hunger and satiety cues, once expressed.²⁷

Training, resources, and outreach:

- Child care providers should receive appropriate training in child nutrition and should be aware of the benchmarks put forth in this position paper.²⁷
- Nutrition education for children and families should be a component of the child care program.²⁷
- Child care providers should work with families to ensure that foods and beverages brought from home meet nutrition guidelines.²⁷
- Child care programs that meet requirements can benefit from participation in the Child and Adult Care Food Program.²⁷

Physical activity- and sedentary time-related recommendations

Physical activity:

- Increase the number of states with licensing regulations for physical activity in child care that require a number of minutes of physical activity per day or by length of time in care.^{9,28}
- Increase the number of states with licensing regulations for physical activity in child care that require activity programs providing large muscle or gross motor activity, development, and/or equipment.²⁸
- Food and nutrition practitioners can work with child care providers to encourage active play in children.²⁸

Sedentary time:

- Increase the proportion of children ages 2–5 years who view television, videos, or play video games for no more than 2 hours a day.^{9,28}

time), most sites were consistently offering foods in forms suitable for easy consumption (96%; *e.g.*, to avoid choking by cutting meats and grapes into small pieces) and offering meals and snacks at regular intervals of 2–3 hours (93%). Less than half of the sites consistently offered a variety of vegetables, attempted to offer more whole grains, offered a variety of fruits, offered foods low in saturated fat, avoided

sugary, fatty, and salty foods, and celebrated holidays and celebrations with snacks that were mostly healthy or celebrated without snacks (Table 2). Though less frequent, some centers did not consistently provide children with greater than 20 minutes to slowly eat and enjoy their food or did not discourage the use of foods as a reward or punishment (Table 2).

Table 2. Frequency of Nutrition and Physical Activity Policies Inadequately Implemented (>80% of the Time) within Low-Income, Rural Community Child Care Centers (*n* = 29)

Food- and nutrition-related practices and policies	<i>n</i>	(%)
Nutritional content of foods and beverages		
Foods low in saturated fat	9	(31)
Avoid sugary, fatty, salty foods	12	(41)
Offer more whole grain products	12	(41)
Offer a variety of vegetables	13	(45)
Offer a variety of fruits	14	(48)
Avoid sugar-sweetened beverages	21	(72)
Predominately low-fat/fat-free dairy are served	24	(83) ^a
Mealtime specific		
Children are encouraged to listen to their bodies with questions such as “are you hungry,” or “are you full,” before serving additional food.	18	(62)
Staff avoid offering food as a reward	20	(69)
Staff sit with children for a pleasant, calm mealtime or snack time	23	(79)
Children have >20 minutes to slowly eat and enjoy their food.	24	(83) ^a
Staff avoid withholding food as a punishment	27	(93) ^a
Training, resources, and outreach		
Holidays and celebrations are mostly healthy or not food based.	12	(41)
Center participates in the Child and Adult Care Food Program.	14	(48)
Physical activity- and sedentary time-related recommendations		
Physical activity		
Planned and structured staff-led physical activity	10	(35)
• Manipulating motor skills	9	(31)
• Stabilizing motor skills	11	(38)
• Traveling motor skills	14	(48)
Children accumulate at least 60–120 minutes of active play per day.	14	(48)
Physical activity receives positive attention.	15	(52)
Movement promoted within other program components	21	(72)
Active play time is not withheld.	25	(86) ^a
Indoor active play plan in place in case of inclement weather	26	(90) ^a
Sedentary time		
Site free from equipment that promotes inactivity (<i>e.g.</i> , VCR/DVD players, TV, computer, video games)	20	(69)

^aThese benchmarks would be expected to be implemented at or near 100% of the time.

VCR, video cassette recorder; DVD, digital video disc; TV, television.

With regard to PA-related policies, most sites consistently reported accommodating children's physical limitations (86%) and having a wide variety of age-appropriate equipment for outdoor play (83%). However, less than half of the sites reported that children accumulated at least 60 minutes of PA a day and included planned and structured staff-led PA or PA intended to develop traveling motor skills, stabilizing motor skills, or manipulating motor skills (Table 2). Whereas only 10% of centers did not have plans for active play in inclement weather, one of five did not promote movement in other parts of their program (Table 2). At least half of the sites promoted positive attention to PA, but approximately one of three were not free from utilizing equipment (*e.g.*, DVD players or computers) that promoted sedentary behavior (Table 2).

Although all sites would meet the income eligibility for CACFP, less than half were participants. Further, less than 40% of sites had parental outreach more than four times a year for education regarding PA, child nutrition, healthy home environments, community health and safety, and nutrition assistance referrals. Specifically, more than 25% of centers reported no parental outreach on topics related to child nutrition, PA, healthy home environments, or referrals to nutrition assistance programs.

Discussion and Conclusions

Although child care centers in low-income, rural communities report implementation of certain nutrition- and PA-related policies, there were several areas that had room for improvement. Research suggests that child care centers may provide a unique opportunity for influencing child diet quality through introducing new foods to children, such as fruits, vegetables, and whole grains, and shaping PA habits, especially in low-income populations.^{10–16} Increasing portion sizes of healthful, nutrient-dense foods increases children's consumption of these foods; therefore, offering a wide variety of healthful foods is important²⁹; however, less than half of the sites in this study were consistently offering a variety of fruits, vegetables, and whole grains. Three (Michigan, Ohio, and Wisconsin) of the seven states included in this study had nutrition policies on record consistent with those defined by Healthy People 2020 for child care centers.^{6,7} In addition, three other states (Indiana, Kansas, and South Dakota) had less stringent nutrition-related policies on record. Though current recommendations exist for nutrition-related policies, some are not enforced or consistently enforced. For example, child care centers may have policies to not force children to eat, when defined as a "punishment," but may have mealtime rules such as requiring children to "clear plates" or take "no thank you bites," which are effectively still forcing children to eat.^{9,27} Nutrition policies have previously improved healthful offerings and intake of healthy foods by children,³⁰ yet if infrastructure and training are lacking or participation is voluntary, such as in the current study, then there may be less success.^{31,32} Further, child care centers in

urban, metropolitan areas have been successful with nutrition policy compliance related to serving sugar-sweetened beverages and switching to low-fat dairy for children over 2 years of age³³; however, less is known about success of policies in a rural setting.

Consistent with national findings, child care centers in this study are not meeting recommendations for daily amounts of PA and avoidance of sedentary behaviors.^{34–37} Currently, children in child care centers are engaging in only 1–3 minutes of active play per hour (8–24 minutes total in an 8-hour day), compared to the recommended 60–120 minutes.^{38,39} To address this issue on a national level, Healthy People 2020 contains current objectives to increase the number of states with licensing regulations for PA in child care to require activity programs providing large muscle or gross motor activity development and/or equipment (from 25 to 35 states), regulations that require children to engage in vigorous or moderate PA (from 3 to 13 states), and regulations that require a minimum number of minutes of PA per day or by length of time in child care (from 1 to 11 states).²⁸ All but one (North Dakota) of the states included in the present study had policies on record regarding large muscle or gross motor activity, development, and/or equipment, but none of the states had requirements regarding vigorous or moderate activity or minimum minutes of PA.⁶ These regulations could greatly improve the PA environment in child care centers. Levels of PA in child care centers are also associated with frequency of sedentary opportunities and existence of fixed play equipment.³⁸ To address the issue of sedentary time, Healthy People 2020 also has an objective to increase the proportion of children ages 2–5 years who watch television (TV), videos, or play video games for less than 2 hours a day from 75.6% to 83.2%.²⁸ Further, literature suggests that success, especially in regard to PA, can be augmented by staff training or technical assistance.⁴⁰

Other considerations for improving nutrition policies or practices within child care facilities include the utilization of available resources, such as federal funds through CACFP for meal reimbursements. Research has suggested that participation in the CACFP is associated with more nutritious foods and beverages served in child care settings, in addition to reimbursement for foods served.⁴¹ However, in this sample, although all income eligible, less than half of centers participated in the program and, correspondingly, less than half of the sites frequently offered a variety of fruits, vegetables, and whole grains. Some barriers to participation in CACFP, such as making it more accessible and equitable to children in rural areas, may need to be resolved at the federal level.⁴²

The type and implementation of nutrition and PA policies may vary among child care centers, especially in rural communities. Rural communities share many similar challenges to preventing obesity, compared to those in urban communities; however, rural communities have the unique challenge of geographical isolation. This, in turn, increases the difficulty families face in rural communities

to obtain transportation, food, and PA opportunities.⁴³ Child care centers in rural communities could consider how to better support families by implementing more healthy school wellness practices and consistent parental outreach, which were also inadequate in this study. Parental outreach is an effective platform for child care centers to extend nutrition and PA information and resources into the home environment, particularly referrals to eligible nutrition assistance programs.^{9,27} Centers reported a lack of funding and staff training to implement nutrition and PA policies, which are most likely the main barriers to providing parental outreach.

Preventing childhood obesity is a complex problem, and child care centers in low-income, rural communities are facing difficulty as it relates to implementing nutrition and PA practices and policies for preschool-age children and families. The unique challenge of geographical isolation may call for creative solutions, such as partnerships with secondary schools, colleges and universities, regional hospitals or health clinics, local churches, or regional community networks to connect child care centers and families with support to implement and practice optimal nutrition and PA policies and behaviors.^{44–46} Funding and education to implement policies could substantially improve the nutrition and PA environment for preschool-age children.

Strengths of the study were its inclusion of data from seven different states, use of a previously validated assessment tool, and the focus on an understudied topic within rural communities. Limitations include reliance on self-reported data and a small sample size within one geographical area (North Central region) of the United States, although a larger sample size may not be possible owing to the limited number of child care facilities serving rural communities. Future studies should investigate resources specific to assisting low-income rural versus urban communities in implementing relevant policies and practices.

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